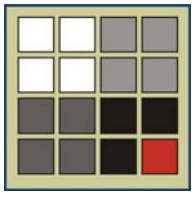
Social and Economic Assessment for Michigan's State Forests

Prepared for: Michigan Department of Natural Resources
Forest, Mineral, and Fire Management Division

Lansing, Michigan

September 5, 2006



Prepared by:
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Preface

Public Act 125 of 2004, Section 52505, requires the Michigan Department of Natural Resources (MiDNR) to seek and maintain third-party sustainable forestry certification. Forest certification requires that MiDNR forest management plans take into consideration social and economic parameters that affect future forest management operations. Currently, the MiDNR is preparing a statewide forest management plan, and each of three eco-teams are drafting ecoregional management plans. The social and economic information provided in this report will be used to assess current social and economic conditions and to develop future management directions within each of the plans.

The report focuses primarily on three ecoregions: the Western Upper Peninsula, Eastern Upper Peninsula, and Northern Lower Peninsula as defined by the MIDNR along county boundaries. It covers social and economic conditions within these ecoregions in aggregate and on a county-level basis. As a result data for the areas in and around Michigan state forests are highlighted.

The "Social and Economic Assessment for the Michigan National Forests" (July 25, 2003), by Larry Leefers, Karen Potter-Witter, and Maureen McDonough from Michigan State University, provides a general model for this report.

The assessment report is based on secondary data. No primary data collection was done. MiDNR personnel provided unpublished data from MiDNR records. The report presents analyses of existing data and discusses relationships and trends in the variables of interest, and contains some projections based on existing literature.

The authors would like to especially acknowledge Lawrence Pedersen and Thomas Haxby of the MiDNR for their cooperation and assistance in this project. We greatly appreciate the assistance of many individuals throughout the MiDNR who provided specific data: Jason Bau, Rick Bresnahan, Steve DeBrabander, Bob DeVilles, Lisa Dygert, Brian Frawley, Tom Hoan, Mike Koss, Susan Krusik, Lt. Tom Lennox, Mark MacKay, Pat Murley, David Price, Jim Radabaugh, Brandon Reed, William Schmidt, Jason Stephens, Anna Sylvester, Ada Takacs, and Eleanora Wehrwein.

All omissions and errors are the sole responsibility of the Authors.

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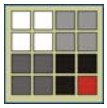

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Chapter 6: Outdoor Recreation Uses and Values

Introduction

Outdoor recreation is an important component of Americans' lives (Bowker et al. 1999). There are many facets of outdoor recreation relevant to state forest management and planning. This section focuses on A) lands available for outdoor recreation, B) special areas and designations, C) recreation facilities, D) state and national trends in recreation activities, E) access to outdoor recreation, F) recreation activities and participation on state and national forests, and G) economic impacts of forest-based recreation visitors. Data and information on outdoor recreation comes from a variety of sources, including the Michigan DNR, the USDA Forest Service and Michigan State University's Travel, Tourism and Recreation Resources Center.

Settings for Outdoor Recreation

Michigan provides many opportunities for outdoor recreation, on public and private lands. The states are dominated by private land, but the principal emphasis in this section is on public lands.

Public lands in Michigan are viewed as a tremendous recreation resource. The variety and extent of public lands are well known (Figure 6.1, Table 6.1). State lands comprise 4.7 million acres of Michigan's total of 36.4 million acres, and federal lands total another 3.2 million acres. The state and federal lands account for over 21% of Michigan lands. The state of Michigan has the largest landholdings including state forests, state park and recreation areas, state wildlife refuges, and state game areas. Federal lands consist of national forests, national lakeshores, a national park, and national wildlife refuges.

State wildlife and game areas are concentrated in the southern Lower Peninsula, whereas state forests and federal lands are concentrated in the northern Lower Peninsula and Upper Peninsula. Forest, Mineral and Fire Management Division of the Michigan Department of Natural Resources manages the state forests, the largest dedicated state forest system in the United States. Several classes of Special Conservation Areas and High Conservation Value areas within the state forests are associated with recreation, notably Trout Streams and Trout Lakes, Visual Management Areas, Concentrated Recreation Areas, Wilderness or Wild Areas, and Natural Rivers. Wildlife Division manages 100 state game and wildlife areas covering nearly 340,000 acres that provide a setting for recreational activities (Nelson and Stynes 2003). In addition, there are 96 state parks and recreation areas with over 270,000 acres, managed by the MiDNR Parks and Recreation Division, throughout Michigan.

At the federal level, the USDA Forest Service manages national forests, the USDI Park Service manages national parks and lakeshores, and the USDI Fish and Wildlife Service manages national wildlife refuges. The national forests (Ottawa, Hiawatha, and Huron-Manistee) comprise the largest federal ownership category, followed by Park Service units (Isle Royale National Park, Pictured Rocks National Lakeshore, Sleeping Bear Dunes National Lakeshore, Keweenaw National Historical Park, Father Marquette National Memorial, and North Country National Scenic Trail). Seney National Wildlife Refuge, located in the central Upper Peninsula, is the largest of several Fish and Wildlife Service units.

Individual privately-owned lands provide another major setting for recreation; seasonal and permanent homeowners recreate on public and private lands in northern Michigan. Commercial forest lands, through the Commercial Forest Act, passed in 1925 (now the Commercial Forest Program, P.A. 451, part 511) provide another major setting for outdoor recreation on private lands. The act encourages retention of timber-growing land by reducing the owners' taxes and requires access to these lands by citizens for hunting and fishing. Over 2.2 million acres are covered in the program with over 1,300 landowners enrolled. The largest landowners have 1.6 million acres enrolled—all in the Upper Peninsula (Figure 6.2, Table 6.2). This area is slightly less than the acreage of national forests in the Upper Peninsula.

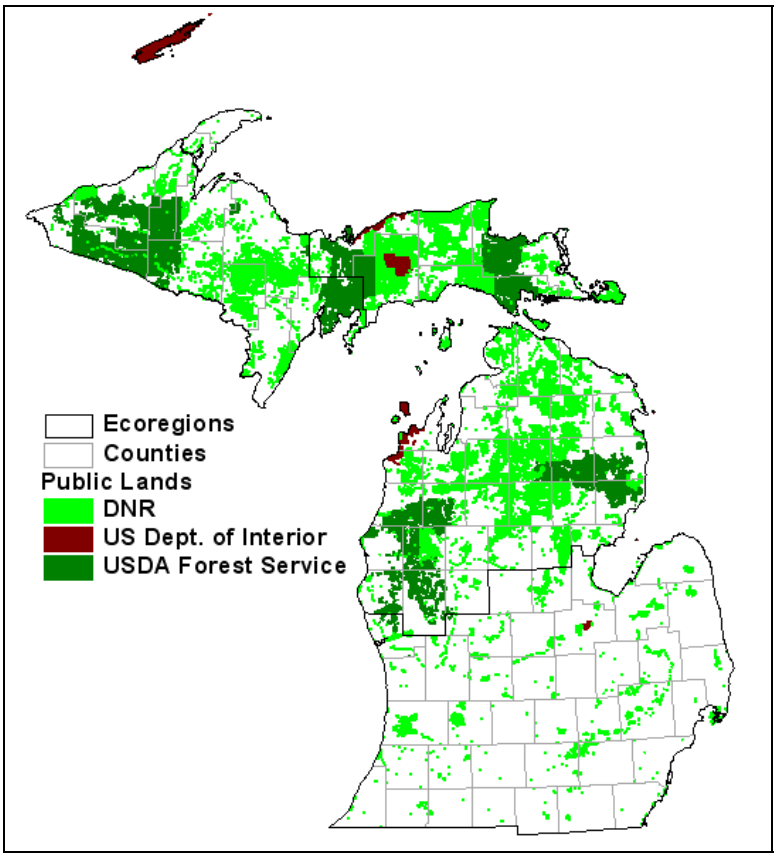

Figure 6.1. Public lands in Michigan.

Table 6.1. Public lands in Michigan[a].

Public Ownership	Upper Peninsula	Northern Lower Peninsula	Total
National Forest	1,875,119	961,400	2,836,519
National Lakeshore	30,092	62,512	92,604
National Park	141,086		141,086
National Wildlife Refuge	93,483	10,116	103,599
State Fish Hatchery	479	379	858
State Forest	1,861,398	1,928,315	3,789,713
State of Michigan	128,980	182,857	311,837
State Park	116,381	80,600	196,980
State Wildlife Area	1,418	10,478	11,897
State Wildlife Management Area	39,840		39,840
State Game Area		231,243	231,243
State Recreation Area		39,372	39,372
State Wildlife Research Area		41,989	41,989
Total Area in Acres	4,288,275	3,549,260	7,837,535

[a]Area, in acres, based on spatial data available at http://www.mcgi.state.mi.us/mgdl/. Totals may not be identical to data published in other sources.

Table 6.2. Major forestland owners enrolled in Michigan's Commercial Forest Program.

Owner	Approximate Acres	County Location
Longyear Realty Corporation	65,000	Baraga, Gogebic, Houghton, Iron, Keweenaw, Marquette, and Ontonagon
The Nature Conservancy	23,076	Luce
Keweenaw Land Association, Ltd.	145,618	Baraga, Dickinson, Gogebic, Houghton, Iron, Keweenaw, Marquette, Ontonagon, and Schoolcraft
Heartwood Forestland Funds II & III, LP	160,461	Iron, Baraga, Houghton, Keweenaw, and Ontonagon
Lake Superior Land Co.	190,194	Baraga, Houghton, Keweenaw, and Ontonagon
International Paper Corporation	231,693	Baraga, Dickinson, Gogebic, Houghton, Iron, Keweenaw, Luce, Marquette, Menominee, and Ontonagon
Heartwood Forestland Fund IV LP	358,079	Alger, Baraga, Chippewa, Delta, Gogebic, Houghton, Luce, Marquette, Ontonagon, and Schoolcraft
Plum Creek	635,094	Alger, Baraga, Chippewa, Delta, Dickinson, Houghton, Iron, Mackinac, Marquette, Menominee, and Ontonagon

Source: Michigan DNR (2006) and adapted from Dickmann and Leefers (2003).

Note: International Paper lands were sold in 2006.

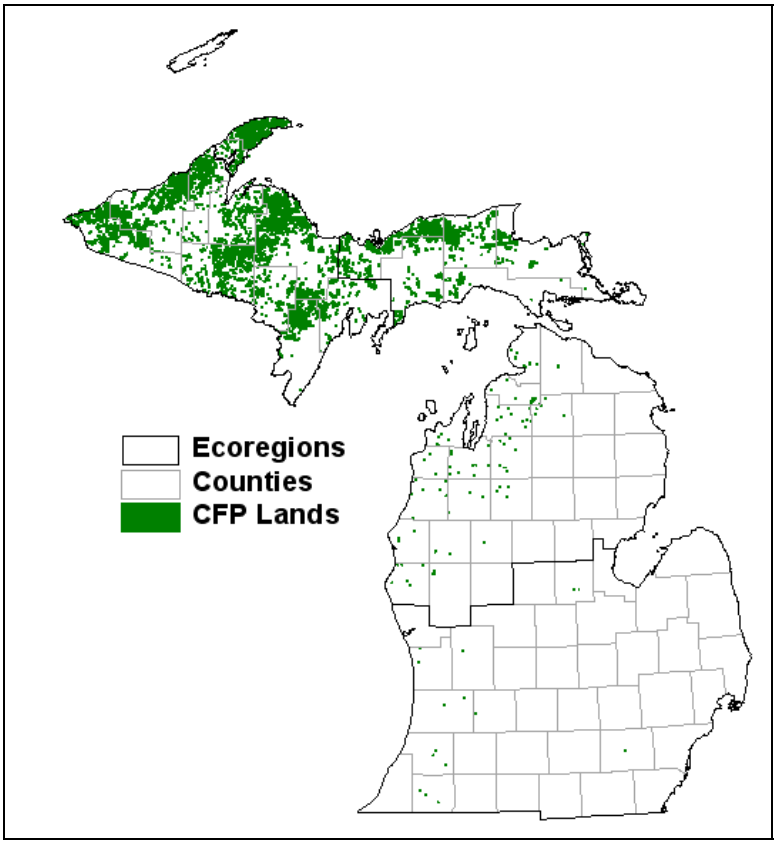

Figure 6.2. Commercial Forest Program lands in northern Michigan, 2005.

Special areas and designations

Recreation Opportunity Spectrum (ROS) areas

Opportunities for recreation experiences are affected by natural resource settings. National forests have instituted the Recreation Opportunity Spectrum (ROS) across the country to classify lands by the mixes of activities, settings and possible experience opportunities they provide (Leefers et al. 1994). Six classes, going from the most remote and natural to the least remote and natural, are recognized along a continuum: primitive, semi-primitive nonmotorized, semi-primitive motorized, roaded natural, rural, and urban (Figure 6.3, Table 6.3). Most Forest Service lands, approximately 3/4s, are in the roaded national class. These areas provide complements and substitutes for state forest based recreation. The MiDNR does not use a comparable recreation-based, forestland classification system that covers all lands.

Primitive	Area is characterized by essentially unmodified natural environment of fairly large size (5,000 acres). Interaction between users is very low and evidence of other users is minimal. The area is managed to be essentially free from evidence of human-induced restrictions and controls. Motorized use within the area is not permitted.
Semi-Primitive Non-Motorized	Area is characterized by a predominantly natural or natural-appearing environment of moderate to large size (2,500 acres). Interaction between users is low, but there is often evidence of other users. The area is managed in such a way that minimum on site controls and restrictions may be present, but are subtle. Motorized use is not permitted.
Semi-Primitive Motorized	Area is characterized by a predominantly natural or natural-appearing environment of moderate to large size (2,500 acres). Concentration of users is low, but there is often evidence of other users. The area is managed in such a way that minimum on site controls and restrictions may be present, but are subtle. Motorized use is permitted.
Roaded Natural	Area is characterized by a predominantly natural-appearing environment with moderate evidence of the sights and sounds other humans. Such evidences usually harmonize with the natural environment. Interaction between users may be low to moderate but with evidence of other users prevalent. Resource modification and utilization practices are evident but harmonize with the natural environment. Conventional motorized use is provided for in construction standards and design of facilities.
Rural	Area is characterized by substantially modified natural environment. Resource modification and utilization practices are to enhance specific recreation activities and to maintain vegetative cover and soil. Sights and sounds of humans are readily evident, and the interaction between users is often moderate to high. A considerable number of facilities are designed for use by a large number of people. Facilities are often provided for special activities. Moderate densities are provided far away from developed sites. Facilities for intensified motorized use and parking are available.
Urban	Area is characterized by a substantially urbanized environment, although the background may have natural-appearing elements. Renewable resource modification and utilization practices are to enhance specific recreation activities. Vegetative cover is often exotic and manicured. Sights and sounds of humans on-site are predominant. Large numbers of users can be expected, both on-site and in nearby areas. Facilities for highly intensified motor use and parking are available with forms of mass transit often available to carry people throughout the site.
Source: Ottawa National Forest Land and Resource Management Plan, Appendix B, 2006.	

Figure 6.3. Recreation Opportunity Spectrum setting and experience characterization.

Table 6.3. Recreation Opportunity Spectrum areas proposed in 2006 Michigan National Forest Plans.

ROS Objective	Ottawa NF	Hiawatha NF[a]	Huron-Manistee NF
Rural/Roaded Natural		1,085	128,483
Roaded Natural	787,600	618,161	715,409
Semi-primitive Motorized	127,750	190,879	17,149
Semi-primitive Non-motorized	74,900	64,034	62,301
Primitive			3,370
Special Management Areas		21,653	46,385

[a]Summer ROS; includes Grand Island as non-motorized.

Wilderness and Wild Areas

The Wilderness and Natural Areas Act, Public Act 241 of 1972 was re-codified in 1994 as Section 35102 of Part 351, PA 451. The Porcupine Mountains Wilderness State park is the most visible part of the state's system of wilderness, wild and natural areas. The Mackinaw State Forest and Wilderness State Park, High Island Wilderness Area, and Hog Island Wilderness Area have also been designated. Additional state forest areas are the Little Presque Isle Wilderness Area, the Dog Lake Wild Area, the Grindstone Creek Wild Area, and Seiner's Point Wild Area. Many of these areas provide recreational opportunities, and are part of the High Conservation Value Areas identified in the 2006 State Forest Management Plan (Michigan Department of Natural Resources 2006). In addition, many natural areas also provide recreational settings.

The national Wilderness Act of 1964 provided the means to designate wilderness on federal lands. Criteria for designation were skewed towards the large areas of western public lands. Congress passed the Eastern Wilderness Act to in 1975, providing opportunities for federal wilderness in the eastern United States. Eventually state-by-state legislation evolved to designate additional areas—1987 was the year in which most Michigan wilderness was designated (Table 6.4).

Wilderness and natural areas provide unique opportunities for dispersed recreation and solitude. These areas have restrictive management standards and guidelines with a clear purpose of preserving natural ecological and social values.

Table 6.4. Natural areas in Michigan protected by the National Wilderness Preservation System.

Wilderness Area (Region)	Acres	Location/Description/Agency
Isle Royale (WUP)	131,880	Keweenaw County, in Lake Superior; diverse boreal forests; Isle Royale National Park
Huron Islands (WUP)	147	Eight remote islands in Lake Superior; Seney National Wildlife Refuge
McCormick (WUP)	16,532	Baraga and Marquette Counties; northern hardwood and conifer forests; Ottawa National Forest
Sturgeon River Gorge (WUP)	14,800	Baraga and Houghton Counties; rugged terrain with northern hardwoods mixed with pines and hemlocks; Ottawa National Forest and Wisconsin Energy Corporation
Sylvania (WUP)	18,327	Gogebic County; located near Watersmeet; northern hardwoods with large areas of mature hemlock; Ottawa National Forest
Seney (EUP)	25,150	Schoolcraft County; located in the heart of the Great Manistique Swamp; variety of habitats including spruce-fir forests, hardwoods, and open water; Seney National Wildlife Refuge

Wilderness Area (Region)	Acres	Location/Description/Agency
Michigan Islands (EUP)	12	Two islands in Lake Michigan and one in Lake Huron; Shiawassee National Wildlife Refuge
Big Island Lake (EUP)	5,500	Schoolcraft County, halfway between Manistique and Munising; low rolling hills with 23 small lakes—hardwoods in upland areas and hemlock, spruce, and balsam fir in the lowlands; Hiawatha National Forest
Delirium (EUP)	12,000	Chippewa County, southwest of Sault Ste. Marie; mostly swamp conifers with some aspen, and red and jack pines; Hiawatha National Forest
Horseshoe Bay (EUP)	3,949	Mackinac County near St. Ignace; Lake Huron shoreline—balsam fir and cedars grow on the ridges adjacent to swamps; Hiawatha National Forest
Mackinac (EUP)	12,388	Mackinac County north of St. Ignace; Carp River flows through area—second growth forest with northern hardwoods, aspen and birch and marshy areas; Hiawatha National Forest
Rock River Canyon (EUP)	5,000	Alger County, between Marquette and Munising; Rock River and Silver Creek canyons with swamp conifers and hardwoods, northern hardwoods in the uplands; Hiawatha National Forest
Round Island (EUP)	378	Mackinac County, between Mackinac and Bois Blanc Islands; also known as Nissawinagang; Hiawatha National Forest
Nordhouse Dunes (NLP)	3,450	Mason County; Lake Michigan shoreline and dunes with northern hardwoods, junipers and stunted jack pine; Huron-Manistee National Forests

Source: Adapted from Dickmann and Leefers (2003).

Natural Rivers and Wild and Scenic Rivers

Michigan's Natural River Act, now Part 305 of PA 451 of 1994, became law in 1970. The law authorized the DNR to develop a system of Natural Rivers for the purpose of preserving and enhancing a river's values for a variety of reasons, including; aesthetics, recreation, and boating. Over 2,000 miles on sixteen rivers or segments of rivers have been designated into Michigan's Natural River System since 1970 (Figure 6.4). Natural Rivers are classified as High Conservation Value Areas. The Fox and Two Hearted rivers are located in the Eastern Upper Peninsula. The Au Sable, Betsie, Boardman, Jordan, Pere Marquette, Pigeon River, Pine, Rifle, Upper Manistee, White rivers are located in the Northern Lower Peninsula, and the Flat, Huron, Lower Kalamazoo, and Rogue rivers are in the Southern Lower Peninsula. Currently, there are no state Natural rivers in the Western Upper Peninsula.

The federal Wild and Scenic Rivers Act of 1968 created a process to select rivers that "possess outstandingly remarkable scenic, recreational, geologic, fish and wildlife, historic, cultural, or other similar values" to be preserved "in free-flowing condition, and that they and their immediate environments shall be protected for the benefit and enjoyment of present and future generations." Designated rivers provide opportunities for many recreational pursuits including fishing, canoeing, hiking, and nature study. The rivers are heavily used by recreationists in many cases (Vasievich 1999).

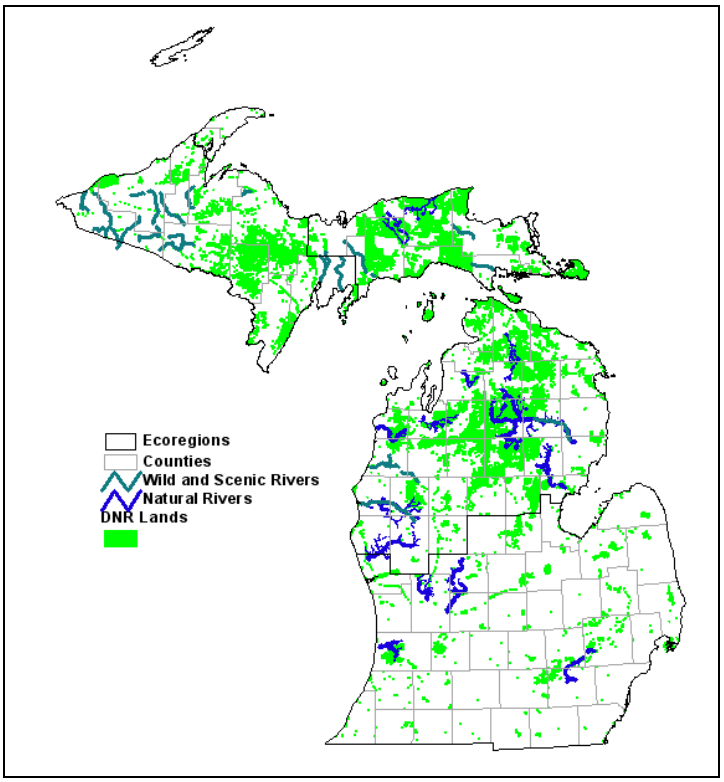

Figure 6.4. Wild and Scenic Rivers and Natural Rivers in Michigan.

Designated trails

Snowmobiling, off-road vehicle (ORV)/all-terrain vehicle (ATV) riding, hiking, cross county skiing, mountain biking, and horseback riding are common uses. Motorized trails far exceed non-motorized trail mileage—over 9,300 miles are available for snowmobiles and ATVs/ORVs. State forest trail opportunities differ by ecoregion (Table 6.5). Pathways in the Upper Peninsula are equally split between the EUP and the WUP. Most pathways are in the Northern Lower Peninsula. Trails are managed by the MiDNR and other providers (Table 6.6).

Table 6.5. Michigan state pathways by Ecoregion.

Western Upper Peninsula	Eastern Upper Peninsula	Northern Lower Peninsula	
Anderson Lake	Algonquin	Besser Bell	Ossineke
Blueberry Ridge	Big Knob / Crow Lake	Betsie River	Pickeral Lake
Cedar River	Bodi Lake	Black Mountain	Pine Baron
Days River	Canada Lake	Buttles Road	Pine Forest
Days River Natural Trail	Fox River	Cadillac	Pine Haven
Gene's Pond	Gemini Lake	Chippewa Hills	Pine Valley
Lake Mary Plains	Indian Lake	Clear Lake	Platte Springs
Little Presque Isle / Harlow Lake	Marsh Lake	High Country	Red Pine Natural Area
Meriman East	Pine Bowl	Inspiration Point	Sand Lake Quiet Area
Ninga Aki	Switchback Ridge	Jordan Valley	Sheep Ranch
West Branch	Tyoga	Lake Ann	Shingle Mill
		Lost Lake	Silver Creek
		Lost Tamarak	Sinkhole

Western Upper Peninsula	Eastern Upper Peninsula	Northern Lower Peninsula	
		Lost Twin Lakes	Spring Brook
		Mason Tract	Tisdale Traingle
		Muncie Lake	Trout Lake
		North Ridge	Vasa Trail
		Oceola	Wah- Wah- Tah- See
		Ocqueoc Falls Bicentenial	Warner Creek
		Ogemaw Hills	Wildwood Hills

Table 6.6. Miles of Trails and Pathways by Provider, 2006.

Trail/Pathway Provider	Snowmobile	ORV Trail / Route	Trailways / Rail Trails	State Forest Trails	State Forest XC Skiing Trails	State Park and Recreation Areas
Private	3,108					
Forest Service	1,554	382				
State Forests (SF)	1,554	2,325				
County/SF Road ROW		478				
Forest, Mineral and Fire Mgt. Div.			814	880	242	
Parks & Rec. Div.			198			878.8
Local Units of Govt.			163			
Total	6,216	3,183	1,145	880	242	878.8

Source: J. Radabaugh; Recreation and Trails; Forest, Mineral and Fire Management Division; MiDNR

Natural Beauty Roads and Heritage Routes

Travel to and from recreational settings has long been recognized as an important part of the recreational experience. Two Michigan programs highlight efforts to identify and preserve transportation routes associated with recreation: Natural Beauty Roads and Heritage Routes. In 2001, Michigan had over 200 miles of Natural Beauty Roads (Part 357 of PA 451; NBR_directory_23594_7[1].pdf). In the NLP, there were 52.83 miles; 18.8 miles were in the EUP, and 12.5 miles were in the WUP. The Heritage Routes Program classifies roads as scenic, historic, or recreational. Scenic routes include an 18-mile stretch of US-41 in Keweenah County (WUP) near Copper Harbor, a 27-mile stretch of M-123 near Tahquamenon Falls State Park (EUP), a 13-mile stretch of M-119 near Cross Village (NLP), and highway M-22 in Leelanau County (NLP). A 16-mile section of US-2 in the WUP forms the Iron County Heritage Trail. And, in the NLP, US-23 from Standish to Mackinaw City is known as the Sunrise Side Coastal Highway, a recreational heritage route.

The federal government has a program similar to the Heritage Routes; it identifies National Scenic Byways. Each national forest has a National Scenic Byway: Black River Harbor (WUP), Whitefish Bay (EUP), and River Road (NLP). These roads provide unique opportunities to view forest scenery. The Black River Harbor Scenic Byway is an 11-mile stretch of Highway 513, north of Bessemer, that parallels the Black River as it flows north to Lake Superior. The Whitefish Bay National Scenic Byway is located along the southern edge of Whitefish Bay on Route 42. The byway passes by the Pt. Iroquois Lightstation and Museum. The 22-mile River Road National Scenic Byway is south of the AuSable River, from Oscoda to Loud Dam and includes many scenic vistas including those at Lumberman's Monument.

Campgrounds and other special areas and designations

Each ecoregion has an array of special areas. Special Conservation Area, High Conservation Value Areas, and Ecological Reference Areas have unique attributes that are valued by many people (MiDNR 2006). Concentrated Recreation Areas, especially state forest campgrounds, are popular areas for forest recreation (Table 6.7). State forest campgrounds are concentrated in the NLP, followed by the EUP and WUP. Michigan has a highly regarded state park system. There are 64 units of the state park system in northern Michigan (Table 6.8). These provide alternative and complementary sites for state forest recreationists. Public and private campgrounds are common throughout the northern Michigan (Figure 6.5,Table 6.9). Commercial campsites exceed all other sources and account for 46% of the campsites within northern Michigan. The second most common provider is the state park system with 18% of the total. State forests and counties each provide an additional 6% of campsites in the area. The largest concentration of campsites is in the Northern Lower Peninsula.

Table 6.7. Michigan state forest campgrounds by Ecoregion.

Western Upper Peninsula	**Eastern Upper Peninsula**	**Northern Lower Peninsula**	
Anderson Lake West	Andrus Lake	4-mile[b]	Long Lake (Wexford)
Bass Lake	Bass Lake	Ambrose Lake[a]	Long Lake (Missaukee)
Beaufort Lake	Big Knob	Arbutus No. 4[a]	Manistee River Bridge[a]
Big Eric's Bridge	Black River	Au Sable River Canoe Camp	Maple Bay[a]
Big Lake	Blind Sucker No. 1	AveryLake[a]	McCollum Lake[a]
Carney Lake	Blind Sucker No. 2	Baxter Bridge[a]	Mio Pond[a]
Cedar River North	Bodi Lake	Beaver Island[a]	Mud Lake
Deer Lake	Canoe Lake	Big Bear Lake[a]	Muskrat Lake[a]
Emily Lake	Culhane Lake	Big Oaks[a]	Ocqueoc Falls[a]
Gene's Pond	Cusino Lake	Black Lake[a]	Old US-131[a]
Glidden Lake	Detour	Bray Creek[a]	Ossineke[a]
King Lake	East Branch of Fox River	Burton's Landing[a]	Parmalee Bridge[a]
Little Lake	Forest Lake	Canoe Harbor[a]	Pickerel Lake[a]
North Horseshoe Lake	Fox River	Carrieville	Pigeon Bridge[a]
Pike Lake	Garnet Lake	CCC Bridge	Pigeon River[a]
Portage Bay	Headquarters Lake	Elk Hill[b]	Pine Grove
Squaw Lake	High Bridge	Ess Lake[a]	Pinney Bridge
West Branch	Hog Island Point	Forks[a]	Platte River[a]
	Holland Lake	Gary Lake[b]	Rainbow bend
	Kingston Lake	Goose Creekb	Reedsburg Dam
	Lake Superior	Goose Lake	Round Lake[a]
	Lime Island	Graves Crossing	Scheck's Place
	Little Brevort Lake North	Guernsey Lake[a]	Scheck's Place[b]
	Little Brevort Lake South	Haakwood[a]	Shupac Lake[a]
	Mead Creek	Healy Lake[a]	Silver Creek[a]
	Merwin Creek	Hopkins Creek[b]	Spring Lake
	Milakokia Lake	Houghton Lake[a]	Stoney Creek[b]
	Mouth Of Two Hearted River	House Lake[a]	Sunrise Lake
	Munuscong River	Jackson Lake[a]	Thunder Bay River[a]
	Natalie	Johnsons Crossing[b]	Tomahawk Lake[a]
	North Gemini Lake	Jones Lake[a]	Town Corner

Western Upper Peninsula	Eastern Upper Peninsula	Northern Lower Peninsula	
	Perch Lake	Keystone Landing[a]	Trout Lake[a]
	Pike Lake	Lake Ann[a]	Tubbs Lake
	Pretty Lake	Lake Dubbonet[a]	Twin Lakes[a]
	Reed And Green Bridge	Lake Dubbonet[b]	Upper Manistee River[a]
	Ross Lake	Lake Margrethe	Veterans Memorial[a]
	Shelldrake Dam	Lake Marjory[a]	Walsh Road[a]
	South Gemini Lake	Leverentz Lake[a]	Weber Lake[a]
	South Manistique Lake	Lincoln Bridge[a]	Wildwood Lake
		Little Wolf Lake[a]	

[a]Rustic Campground, [b]Trail Camp

Table 6.8. Michigan state parks by Ecoregion.

Western Upper Peninsula	Eastern Upper Peninsula	Northern Lower Peninsula	
Agate Falls[c]	Brimley	Aloha	Otsego Lake
McLain	Father Marquette Memorial[c]	Burt	P.H. Hoeft
Baraga	Fort Mackinac Historic	Charles Mears	Petoskey
Bewabic	Indian Lake	Cheboygan	Rifle River[d]
Bond Falls[c]	Laughing Whitefish Falls[c]	Clear Lake	Silver Lake
Craig Lake	Muskallonge Lake	Fisherman's Island	South Higgins Lake
Fayette[b]	Palms Book	Harrisville	Sturgeon Point[c]
Fort Wilkins[b]	Straits	Hart-Montague Trail[a]	Tawas Point
J.W. Wells	Tahquamenon Falls	Hartwick Pines	Thomson's Harbor
Lake Gogebic	Wagner Falls[c]	Interlochen	Traverse City
Porcupine Mountains Wilderness		Leelanau	White Pine Trail
Twin Lakes		Ludington	Wilderness
Van Riper		Negwegon	William Mitchell
		Newaygo	Wilson
		North Higgins Lake	Young
		Orchard Beach	

[a]Linear park, [b]Historic park, [c]Scenic site, [d]Recreation area.

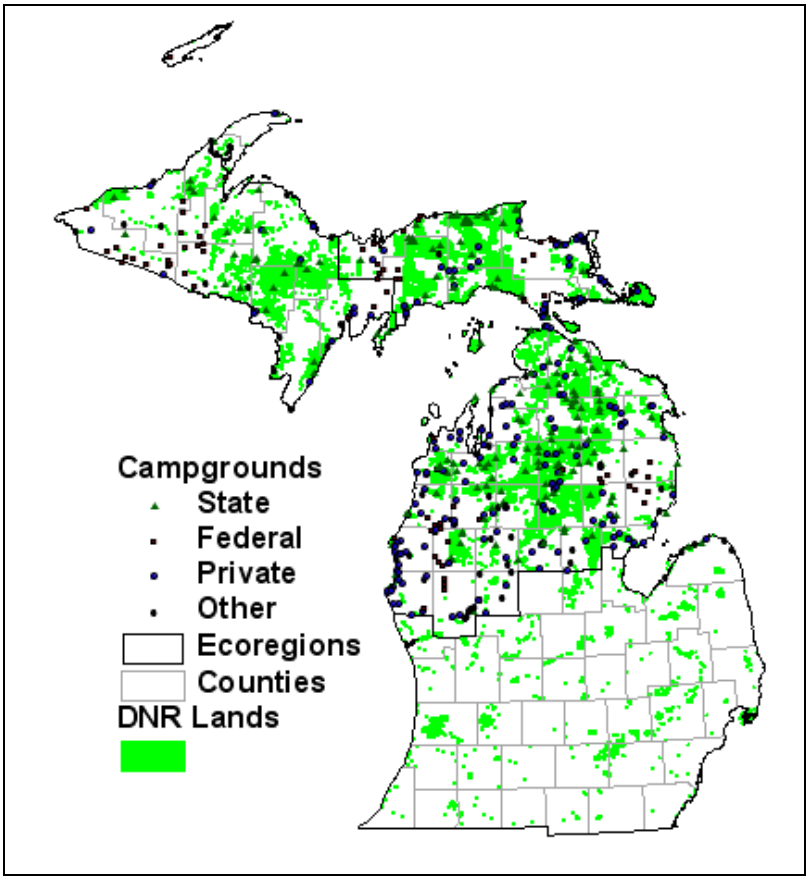

Figure 6.5. Public and private campgrounds in northern Michigan (Source: Leefers and Vasievich 2001).

Table 6.9. Campsites by ecoregion, 2000.

Provider	WUP	EUP	NLP
Commercial	1,321	2,421	19,187
County	582	30	2,307
Township	216	397	1,930
Municipal	542	227	1,224
Condominium	37	0	2,234
Fraternal	0	0	92
Recreation	0	0	461
Religious	16	21	845
Other nonprofit	16	0	685
State forest	338	770	1,935
State park	1,418	1,396	6,114
National forest	647	642	817
National park	244	151	166
Total	5,347	6,045	37,967

Source: Travel, Tourism, and Recreation Resources Center, Michigan State University.

Recreation facilities

There are many recreation facilities in Michigan. According to Michigan State University's Travel, Tourism and Recreation Resources Center, there are approximately seven million acres of public recreation land in northern Michigan (Table 6.10).

Most of Michigan's designated Natural Rivers and Wild and Scenic Rivers fall within the area (Figure 6.4). And there are approximately 620,000 acres of lakes and ponds within the three ecoregions—most available for public recreation. In 1990, over 900 public access sites were identified in the northern counties. Thousands of miles of trails and roads exist within the areas to provide a range of recreation experiences.

Table 6.10. Natural resources and recreation/travel facilities by ecoregion.

	YEAR	WUP	EUP	NLP
NATURAL RESOURCES				
Land area (acres)	1989	6,942,272	3,587,392	10,377,856
Water area (acres)	1989	192,192	229,312	361,152
Total area (acres)	1989	7,134,464	3,816,704	10,739,008
Area of public recreation land (acres)	1990	2,268,124	1,879,2153	3,027,310
Rivers and streams (miles)	N.A.	9,158	3,248	7,835
State or federal wild/scenic/natural rivers (miles)	1990	380	322	1,263
Natural or artificial lakes and ponds (acres)	1991	149,753	98,478	374,923
RECREATION AND TRAVEL FACILITIES				
Public access sites (number)	1990	245	110	546
Designated scenic highway (miles)	1990	575	389	764
State-funded snowmobile trail (miles)	1990	1,253	697	1,511
Hiking/skiing/mtn.biking trail (miles)	1994	1,314	766	2,100
Designated off-road vehicle trail (miles)	1992	217	356	1,966

Source: Various sources and years; published by the Travel, Tourism, and Recreation Resources Center, Michigan State University.

State and national trends in recreation activities

Recreation behavior is affected by demographic factors such as age, race or ethnicity, sex, wealth or income, education, and previous experience (Bowker et al. 1999). Bowker and others used these variables to project future recreation activity, nationally and regionally. They estimated 1) millions of participants age 16 years and older, 2) consumption in millions of days annually, and 3) consumption in millions of primary purpose trips (Bowker et al. 1999). We indexed the projections to 2000 (=100) as a base year. As a result, various activity projections can be compared relative to each other and relative to population growth within the region (Table 6.11). Michigan is part of the projections for the North region, but state-specific projections are not available. The individual activities can be further classified as winter, water-based, wildlife-related, dispersed land, and developed land activities. These projections rely on data from the Survey on Recreation and the Environment (NSRE) (Bowker et al. 1999, Cordell et al. 1999). Participation, days and trips are projected, but only trips are reported here because they are most closely linked with visitors' expenditures—most economic impact surveys gather data based on trips.

Table 6.11. Projections for change in the U.S. population and selected recreation visits for the region (North Region), adjusted to 2000 = 100.

Recreation Activities	2000	2010	2020	2030	2040	2050
U.S. Population—North Region	100	105	113	119	123	129
Winter Activities						
Cross-Country Skiing	100	104	111	120	130	146
Snowmobiling	100	115	134	154	175	206
Water-Based Activities						
Canoeing	100	95	92	91	91	92
Nonpool Swimming	100	101	106	111	115	122
Rafting/Floating	100	93	91	89	89	82
Wildlife-Related Activities						
Fishing	100	100	102	102	98	96
Hunting	100	103	109	115	117	121
Nonconsumptive Wildlife Activities	100	106	114	114	106	94
Dispersed Land Activities						
Backpacking	100	97	98	100	102	110
Hiking	100	99	103	104	103	102
Horseback Riding	100	108	120	130	136	144
Off-Road Driving	100	86	75	65	57	49
Primitive Camping	100	96	95	91	84	78
Developed Land Activities						
Biking	100	114	131	148	162	180
Developed Camping	100	107	117	125	129	135
Picnicking	100	79	64	53	44	33
Sightseeing	100	111	125	139	144	157
Visiting Historical Places	100	117	138	155	166	174
Walking	100	106	114	121	126	132

Source: Adapted from Bowker et al. 1999.

Population is projected to increase by 29% in the North region from 2000 to 2050. Most recreation trips are projected to increase more slowly than population. Trips for activities such as cross-country skiing, snowmobiling, horseback riding, biking, sightseeing, visiting historical places, and walking are projected to increase faster than population growth. Hunting, developed camping and nonpool swimming are projected to increase at about the same rate as population growth. Trips for many traditional activities (e.g., picnicking, off-road driving, and primitive camping) are projected to decline markedly. These shifts are based on increased income and projected changes in demographic characteristics (e.g., an aging population). Though trips may decline in some cases, the number of days may increase—that is, longer multipurpose trips may have specific recreation activities as secondary purposes. For example, fishing may become a secondary to other primary activities. Only four activities were projected to increase in terms of trips, participation, and days—horseback riding, biking, sightseeing, and visiting historical places. Recent trends in camping, hunting and other activities can be compared to these projections.

Socio-demographic shifts will affect outdoor recreation participation and trends (Chavez 2001). Ethnic and racial minorities are increasing in absolute and relative size in the U.S., and they can be expected to increase their participation in outdoor recreation activities. Overall an aging population may slow growth. Increased wealth,

however, may mitigate some effects of aging and bring more off-season travel and demands for more education-oriented facilities and activities.

Recreation participation rates also differ depending on which generation is considered (Warnick 2001). Generations include the GI Generation (born 1904-25), the Silent Generation (born 1926-43), the Baby Boom Generation (born 1944-60), the 13th Generation (1961-82), and the Millennial Generation (1983-present). A few examples of recreation activities (i.e., golf, downhill skiing, swimming, and hunting) during the 1980-96 period illustrate how participation varies by age cohort. The 13th Generation had declines in swimming, hunting, and downhill skiing as it aged, but there were increases in golf activity. The Silent Generation and the Baby Boomers had similar declines. Looking across generations at the same age cohort (e.g., comparing generations when they were 18-24 years old), golfing rates were lower for Baby Boomers compared to 13th Generation, but hunting and swimming participation were higher for Baby Boomers. Downhill skiing varied depending on age of cohorts. Overall, the 45-54 year olds had substantial changes in participation—monitoring this older group will help managers assess new niches for forest-based recreation.

Amenity migration, another phenomenon, also is affecting many rural areas—people are migrating to rural areas due to their rich natural resource amenities, and they are willing to have less income and fewer job opportunities (Stewart 2001). Basically, they are interested in a better quality of life. Researchers have found that net in-migration is significantly related to natural resource amenities; new and long-time residents value these amenities (Section 3). Economic prosperity and diversification, increasing property values, and reduced out-migration are attributed to amenity migration. Sprawl and loss of habitat may also result from amenity migration. Local infrastructure, In some cases, cannot support population influxes and must be expanded. Amenity migration may be driven by retirement (e.g., mailbox economy), technological changes (e.g., telecommuting), and second home purchases (e.g., investment), and new residents bring ideas and perceptions about how forests should be managed. Traditional management activities may or may not be acceptable to these new migrants.

Access to outdoor recreation (including transportation and traffic counts)

Forests in Michigan are widely accessible through a variety of state, county, and MiDNR roads; thirty-nine percent of timberland in Michigan is within one-quarter mile of a maintained road (Hansen and Hahn 1987). An additional 47% of timberlands are between one-quarter and three-quarters of a mile from a road.

Major routes for the WUP are U.S. Route 2 and Michigan Route 28 which run east and west, U.S. Route 51 from Wisconsin into Ironwood, U.S. Route 45 from Wisconsin into Watersmeet, and Michigan Route 95 from Wisconsin into Iron Mountain. U.S. Route 2 in the Ironwood-Bessemer-Wakefield area has an average daily traffic count of 1,700 vehicles east of Wakefield to 8,900 vehicles near the Wisconsin border in 2004 (http://www.michigan.gov/mdot/). Michigan Route 95 has an average daily traffic count of 6.100 vehicles near the Wisconsin border to 21,900 where it joins U.S. Route 2.

The EUP is accessed by some of the same routes as the WUP—U.S. Route 2, Michigan Route 95 from Iron Mountain, and Michigan Route 28. U.S. Route 41 from Marinette-Menominee is the other major access route in the WUP. Interstate Highway 75, in the EUP provides the north-south link with Canada and the NLP. The average daily traffic count for U.S. Route 2/41 in the Escanaba-Gladstone area ranges from 15,000 on the west side of Escanaba to 9,000 east of Gladstone. The average daily traffic count across the International Bridge in Sault Ste. Marie is 5,600. The count near 3 Mile Road on the south side of town is 8,100.

Major north-south routes that provide access to the NLP are U.S. Route 31 out of Muskegon, U.S. Route 131 out of Grand Rapids, U.S. Route 27 out of Lansing, and Interstate Highway 75 out of Detroit-Flint-Saginaw. The average daily traffic count for Route 31 north of Muskegon is 45,100 vehicles. On U.S. Route 131 north of Big Rapids, the daily count is 11,400; the count on U.S. 127 north of Mt. Pleasant is 17,700. Finally, the average daily traffic count on I-75 north of Saginaw is 58,000.

Major east-west routes in the NLP are Michigan Route 55 from Tawas City to Manistee, U.S. Route 10 from Saginaw-Midland to Ludington, and Michigan Route 115 from Clare to Cadillac. The average daily traffic count for Michigan Routes 55/115 near Lake Cadillac is 10,100. Northbound traffic on M-115 north of Lake Mitchell is 10,400, and westbound traffic on M-55 is 8,600.

Recreation activities and participation on state and national forests

The USDA Forest Service conducts a nationwide, systematic recreation survey through the National Visitor Use Monitoring (NVUM) Program that was implemented in 2000 (http://www.fs.fed.us/recreation/programs/nvum/). It provides statistically reliable recreation visitation on national forests, national grasslands, and designated wilderness areas (English et al. 2002). A recreation visit is defined as "…one person entering and exiting a national forest, national grassland or designated wilderness area for the purpose of recreation." Visitors may participate in multiple activities (e.g., hiking, nature study, etc.) and may visit more than one site (e.g., developed campground, hiking trail, etc.). Care is taken to prevent "double counting" or sampling a person more than once during a visit. The three national forest in Michigan have been surveyed under the NVUM Program.

Forest-specific reports provide visitation estimates, profiles or descriptions of visitors, a description of the visits, economic/spending information, and satisfaction information. Though not identical to state forests, some information gleaned in these studies may be applicable to state forests (see Kocis et al. 2002a, 2002b, 2004).

National forest visitors spent the most time at Overnight-Use Developed Sites (24.2-48.0 hours) and in Wilderness areas (17.4-48.3 hours) (Table 6.12). The least amount of time was spent at Day-Use Developed Sites (2.5-3.0 hours). The average visit was 12.0-18.1 hours.

Table 6.12. Site visit length of stay (in hours) from the National Visitor Use Monitoring (NVUM) Program, by Michigan national forest.

Site Type	Ottawa	Hiawatha	Huron-Manistee
	Hours per Visit		
Day-Use Developed Site	3.0	2.5	3.0
Overnight-Use Developed Site	24.2	48.0	39.9
Wilderness	48.3	17.4	28.0
General Forest Area	28.0	10.9	14.1
Average, All Sites	18.1	12.0	12.6

Source: Kocis et al. 2002a, 2002b, 2004.

The top five recreation activities differ by forest, but hunting is a common top-five activity on all forests (Table 6.13). Twenty-six categories of recreation use were identified in the NVUM survey. Everyone was asked to identify their primary activity. For example, 13% of visitors to the Hiawatha National Forest fished, but only 6% identified this as their primary activity. Downhill skiing and snowmobiling were the highest uses tallied on the Upper Peninsula national forests (Kocis et al. 2002a, 2002b, 2004). The samples in the northern Lower Peninsula did not capture any snowmobile travel. Aside from these concerns, the NVUM data provide the most consistent recreation use data available for the national forests.

Table 6.13. Top five primary recreation activities (and percent) from the National Visitor Use Monitoring (NVUM) Program, by national forest.

Ottawa	Hiawatha	Huron-Manistee
Downhill skiing (22%)	Snowmobile travel (30%)	General/Other Recreation (19%)
Hunting (17%)	General/Other Recreation (19%)	Viewing natural features such as scenery and flowers (17%)
Snowmobiling (17%)	Viewing wildlife, birds, and fish (18%)	Off-highway vehicle travel (10%)
Viewing Natural Features (8%)	Fishing – all types (11%)	Hunting – all types (9%)
Fishing (6%)	Hunting – all types (10%)	Hiking or walking (8%)

Source: Kocis et al. 2002a, 2002b, 2004.

The 2006 State Forest Management Plan provides standards and guidelines for water access; recreational trails; state forest campgrounds; and hunting, fishing, trapping, and other dispersed recreation; managed hunting areas; and scenery management. Data availability related to recreational use for these settings is mixed. Detailed data are available from state forest campgrounds around the state, but other data are available in the form of licenses, from past studies or not at all. Studies and data associated with water access; recreational trails; state forest campgrounds; and hunting, fishing, trapping, and other dispersed recreation are presented in this subsection.

Water access

Michigan's extensive water resources make access an important element of natural resource management. There are hundreds of boat launches from public lands in Michigan: 116 at state forests, 100 at state parks, and 485 undeveloped water access sites on state forests (Nelson and Stynes 2003).

Based on NVUM statistics, 3% of Ottawa National Forest visitors, 3% of Hiawatha National Forest visitors and 4.1% of Huron-Manistee National Forests visitors have nonmotorized water travel (canoe, raft, etc.) as the primary activity—fewer people use motorized water travel on national forests. Several studies have focused on river-based recreation in the northern Lower Peninsula for thee AuSable, Pere Marquette, and Upper Manistee rivers (Johnson and Nelson 1996, Nelson and Johnson 1998, Nelson, Johnson, and Stynes 1998, and Nelson, Valentine, and Lynch 2002).

Though studies of river recreation were completed prior to the 1990s, most recent efforts relate to natural resource planning and management. The 1994 study of watercraft use on the AuSable River provides one example (Johnson and Nelson 1996). Natural River and Wild and Scenic River status is associated with the AuSable. The authors estimated watercraft use for the 101-day summer season for livery canoes, non-livery canoes, tubes and rafts, and boats. Estimates were compared to results of a 1984 survey that used similar methods. Watercraft use declined somewhat in three of four river segments studied, but weekend/holiday use increased considerably. A shift toward use of tubes and rafts was noted. The first river segment (near Mio) had approximately 11,000 watercraft during the 101-day survey, but use dropped off farther downriver—the last segment had just over 1,000 watercraft. Total use declined 15% in 1994 relative to 1984. Total use declined approximately 15% from 1984 to 1994. Newer use estimates are not available.

Another study in the NLP was completed in 1996 and 1997. Recreation use associated with selected access sites and originating from private riparian owners within the Pere Marquette Wild and Scenic River corridor was assessed (Nelson and Johnson 1998, and Nelson et al. 1998). Five of 18 public access sites along the surveyed river stretch are under MiDNR jurisdiction, and the remaining sites are Forest Service sites. Two canoe liveries were also surveyed. From fall 1996 through summer 1997, over 67,000 vehicles were parked at access sites, accounting for 163,000 visits. Approximately 22% of sampled vehicles were parked at MiDNR access sites. Shore fishing and wading was the most popular activity in each season for riparian owners and their guests and by users of access sites; rental canoeing was popular in the summer. Hiking was the second most popular activity in all seasons. Almost 180,000 hours of recreation use was estimated for riparian owners—access site visitors accounted for an additional 760,000 hours of use. Approximately 20% of corridor recreation use was due to riparian owners and their guests. Economic impacts associated with access site users were estimated: $7 million in sales, $4 million in income and 229 jobs were attributed to these recreation activities.

Nelson and others (2002) completed a similar study of the Upper Manistee River in 2001. They estimated about 1.3 million hours of recreation use, with the same portion attributed to riparian owners. $3.5 million in local spending was associated with public access users.

Recreational trails

The state forest system and other owners provide opportunities for motorized and non-motorized trail use. Several studies shed insights regarding these activities. For snowmobiles and ORVs, the MiDNR has license sales to track the level of interest in these activities (Figure 6.6). The Michigan Snowmobile Association also sells snowmobile licenses; those sales are not reflected in Figure 6.6 (Note: Point-of-sale licenses for snowmobiles were not made in 2004.). Overall, there is an upward trend in MiDNR-sold ORV and snowmobile licenses.

Forest visitors often mention off-road vehicle (ORV) use as an important recreation activity. Recent studies provide additional insights regarding this activity (Nelson et al. 2000, Nelson and Lynch 2001a, and Nelson and Lynch 2001b). In Michigan Public Act 71 of 1990

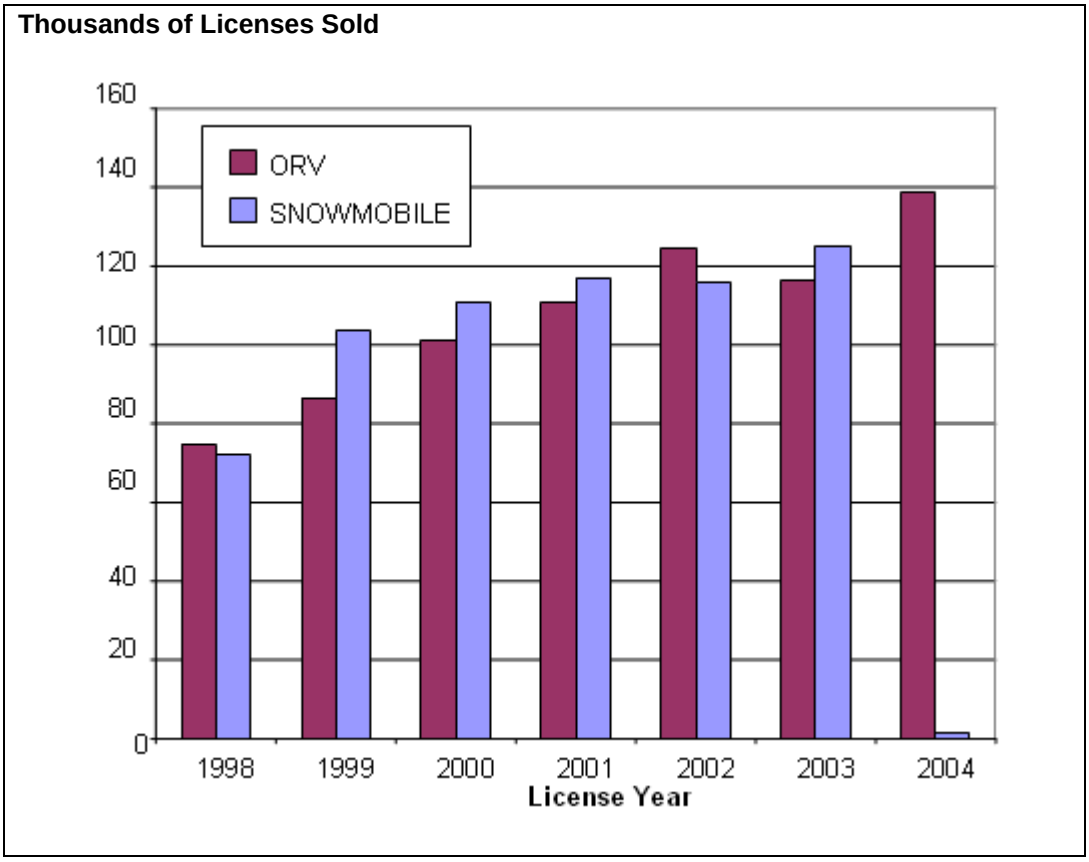

Figure 6.6. MiDNR snowmobile and ORV license sales (in thousands), 1998-2004.

implemented a “closed unless posted open” system for ORV use on public lands in the Lower Peninsula (Nelson, Stynes, and Lynch 2000). ORV use in the Upper Peninsula is allowed on unposted state forest roads as well as on the designated system. The Forest Service’s national policy, instituted in 2005, is to allow ORV use on posted areas, trails and roads only.

In 1999, the designated ORV system had 3,107 miles of ORV trails and five major scramble areas where vehicles climb hills of varying terrain in concentrated areas. Over 2,400 ORV users (out of approximately 5,000 surveyed) answered questions regarding their recreation activities (Nelson et al. 2000). There were 124,723 Michigan DNR licensed ORVs for the 1998-99 license year. Seven ORV ownership segments were identified: motorcycle only, all-terrain vehicle (ATV) only, sports utility vehicle (SUV) only, cycle/ATV, ATV/SUV, cycle/SUV, and cycle/ATV/SUV. The “ATV only” segment was the largest (53%). ORV use of public forest roads, designated ORV trails/routes, and scramble areas (excluding fishing and hunting use) in the Upper Peninsula and the northern Lower Peninsula was estimated at nearly 1.2 million days. The most popular scramble areas were Bull Gap, Silver Lake State Park, St. Helens Motorsport Area, The Mounds, and Black Mountain Motorsport Area. ORV use varies by region and type of use. Off-road All Terrain Vehicles (ATVs) have the highest use, followed by off-road motorcycles and SUVs (Nelson et al. 2000). ATV use is highest on private lands in the UP and NLP. Off-road motorcycle use and off-road SUV use are highest on public lands in the NLP. Twenty percent of ATV use and 27% of SUV use is related to hunting.

Snowmobiling is another popular recreational activity in Michigan. Snowmobilers find ample opportunities to recreate on the extensive system of groomed public trails and on the shoulders of county roads in northern Michigan. In some cases, communities are linked to allow riders to enjoy lodging, restaurants and other amenities (Nelson et al. 1998). For the 1995-96 trail permit season, over 212,000 permits were sold. In 1996-97, snowmobile users participated in over 2.1 million snowmobile days. The relationship of this use was not related to public lands, or more specifically to MiDNR lands. Snowmobile spending creates a significant economic impact in

northern Michigan; people coming into northern Michigan in 1996-97 spent approximately $86 million at their destinations (Stynes et al.1998). The northwest Lower Peninsula was the most popular destination, followed by the Western Upper Peninsula.

In 1995-96, an assessment of state forest non-motorized pathways was completed (Lynch and Nelson 1996). The study concluded that the pathway system was sizable, was in good condition, was comprised of multiple-use trails, had challenges regarding mountain biking and equestrian uses, focused expenditures on personnel, and was under-funded relative to needs.

State forest campgrounds

Camper days, a measure of recreation use, at state forest campgrounds has been relatively stable in the past four years (Figure 6.7). Most camper days are associated with the NLP. Senior citizens are an important segment of the camping population.

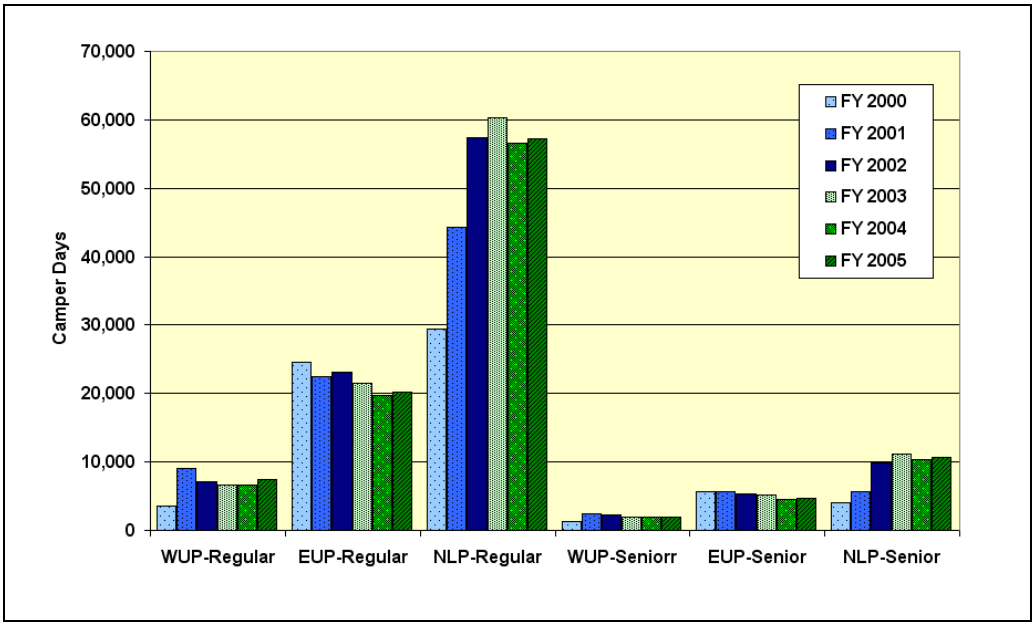

Figure 6.7. Camper days at state forest campgrounds by ecoregion for regular and senior campers, FY 2000-05.

Other camping opportunities at state forests come in the form of cabins and group camping (Table 6.14). Cabin camping was relatively unchanged from 2002-05; most occurred in the WUP. Group camping, heavily concentrated in the NLP, increased substantially in 2005.

Table 6.14. Camper days in cabins and group areas by ecoregion, FY 2002-05.

Rate type	Fiscal Year	WUP	EUP	NLP	Total
Cabin	2002	739	137		876
Cabin	2003	728	147		875
Cabin	2004	683	145		828
Cabin	2005	678	188		866
Group	2002		1	1047	1048
Group	2003			948	948
Group	2004			1036	1036

Rate type	Fiscal Year	WUP	EUP	NLP	Total
Group	2005	1		2378	2379

State forest provide some of the lowest fee camping experiences in Michigan (Figures 6.8 and 6.9). Private sites (PVT) provide the most camping opportunities, and they charge more for amenities not offered at most public campgrounds (Leefers and Vasievich 2001). National forest (NF) campgrounds charge similar fees to state forest (SF) campgrounds; state parks (SP) charge more.

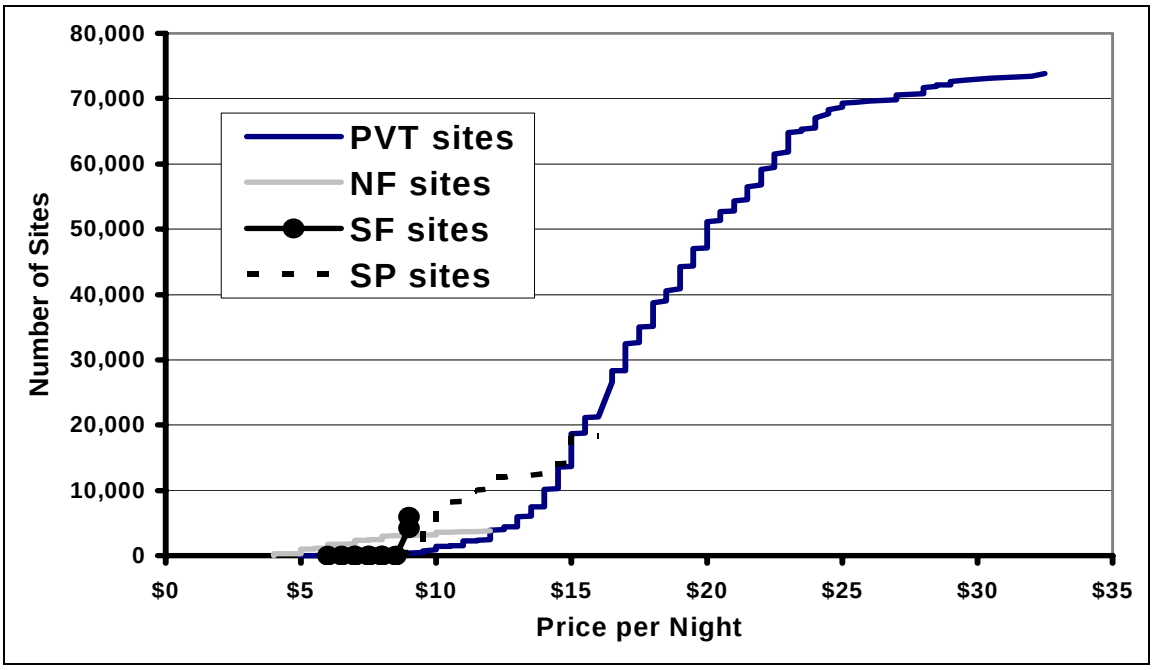

Figure 6.8. Fee structure at private and public campgrounds, ca. 2000 (Source: Leefers and Vasievich 2001).

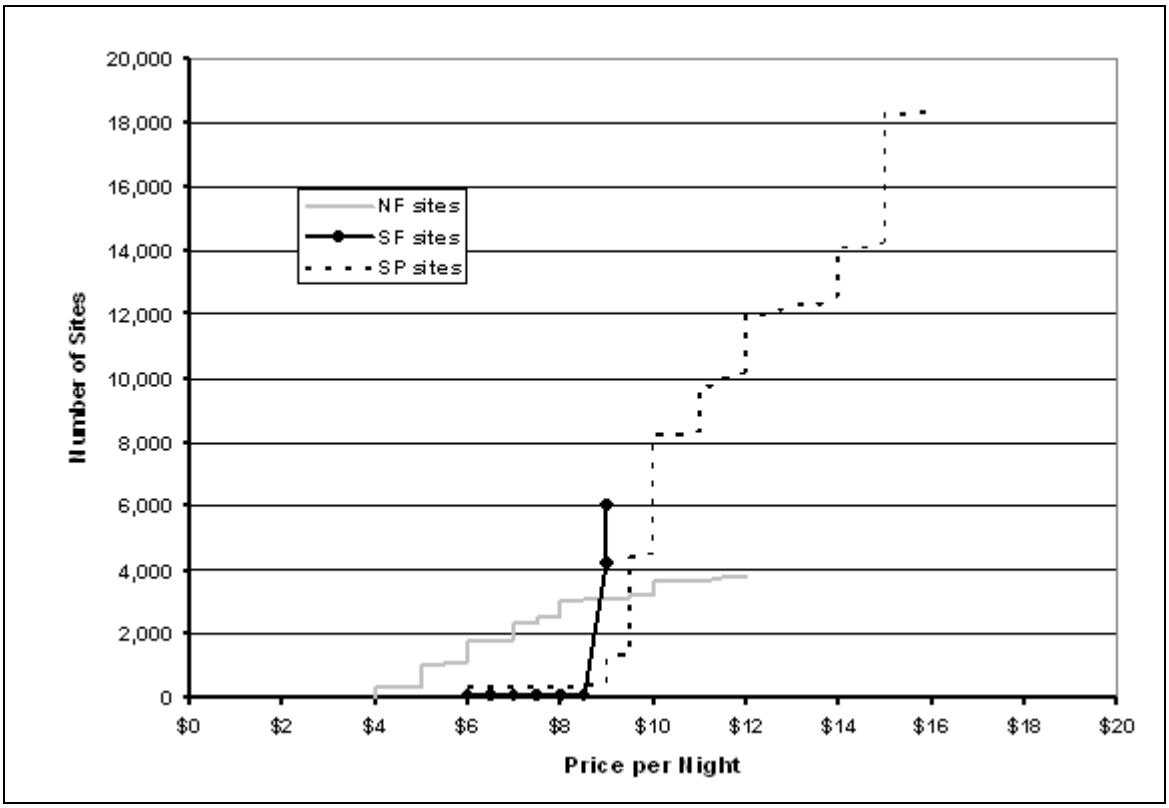

Figure 6.9. Fee structure at public campgrounds, ca. 2000 (Source: Leefers and Vasievich 2001).

Hunting, fishing, trapping, and other dispersed recreation

The U.S. Fish and Wildlife Service, in conjunction with the Bureau of Census, conducts a national survey of fishing, hunting, and wildlife-related recreation. For the 1996 and 2001 surveys, Michigan-specific reports were developed (U.S.D.I. Fish and Wildlife Service, and U.S.D.C. Bureau of the Census 1998, 2003). The surveys compile various types of data on participation, hunter and angler characteristics, and expenditures. In 2001, Michigan ranked seventh nationally in total wildlife-related participants where activities took place (3.5 million participants 16 years old and older) and in expenditures for wildlife-related recreation ($2.8 billion). Wildlife-related recreation includes hunting, fishing, and wildlife watching. Over 1.7 million residents and non-residents fished or hunted. Participation in fishing, hunting, and wildlife watching by Michigan residents declined from 1996 to 2001.

MiDNR's Wildlife Division surveys hunters regarding their effort and success. Overall, though hunter numbers are substantial, the number of paid hunting license holders has declined in recent years (Frawley 2004, Figure 6.10). This downward trend is reflected in the number of active firearm deer, small game and waterfowl hunters (Figure 6.11). The number of turkey hunters and bear hunters has increased significantly in recent years, and the number of furtakers has increased as well (Figures 6.12 and 6.13). Unpublished hunting-related data based on counties will be available in late 2006 (B.J. Frawley, MiDNR, pers. com. 2006).

More recent MiDNR studies are available for deer turkey, and small game hunting and bobcat trapping (Frawley 2005a, 2005b, 2005c, 2005d and 2006). The number of people hunting deer in Michigan has been on the decline since the late 1990s (Frawley 2006). Approximately 1.8 million harvest tags were purchased in 2003 compared with 1.6 million in 2005. Statewide, there were 670 thousand deer hunters who harvested 417,000 deer in 2005. Over half of the 10-million day hunting effort was in the SLP, followed by 5.5-million days in the NLP, 0.8-million days in the WUP, and 0.3-million days in the EUP. Eighty-seven percent of deer harvested statewide came from private lands. Turkey hunting in Fall 2004 and Spring 2006 involved16,200 and 90,300 hunters, respectively (Frawley 2005b, 2005c). Over 45% of the Spring hunters hunted on public lands; only 8% of Fall hunters did so. Small game hunting seasons are set for ring-necked pheasants, northern bobwhites, ruffed grouse, American woodcock, cottontail rabbits, snowshoe hare, squirrels, and American crows (Frawley 2005d). The number of hunters has declined in recent years, but there were over 210,000 hunters in 2004. The greatest hunting effort

(days afield) is associated with ruffed grouse and cottontail rabbits. Ruffed grouse hunting is concentrated in the UP and NLP, whereas cottontail rabbit hunting is concentrated in the SLP and NLP.

License sales provide additional insights into contemporary hunting and trapping. Hunting and trapping are activities related to public and private forestlands. Bear hunting license sales have been increasing in recent years (Table 6.15). Elk hunting uses a lottery, and the number of applications has vacillated in recent years—applications decline when fewer elk are targeted for harvest. Fur trapping licenses have increased for several years. In addition to the licenses reported in Table 6.15, 7,550 bobcat licenses were issued in 2004.

Table 6.15. License sales for selected hunting and trapping species, 1997-2004.

License Year		Elk		
	Bear	Applications	License	Fur
1997	27,495	34,799	353	14,235
1998	44,288	40,376	355	18,520
1999	46,896	39,725	188	17,169
2000	58,467	48,652	366	17,873
2001	63,447	46,933	247	19,293
2002	62,771	37,939	142	19,911
2003	64,138	38,777	97	21,024
2004	66,357	40,595	123	22,006

Source: Customer Systems, MiDNR.

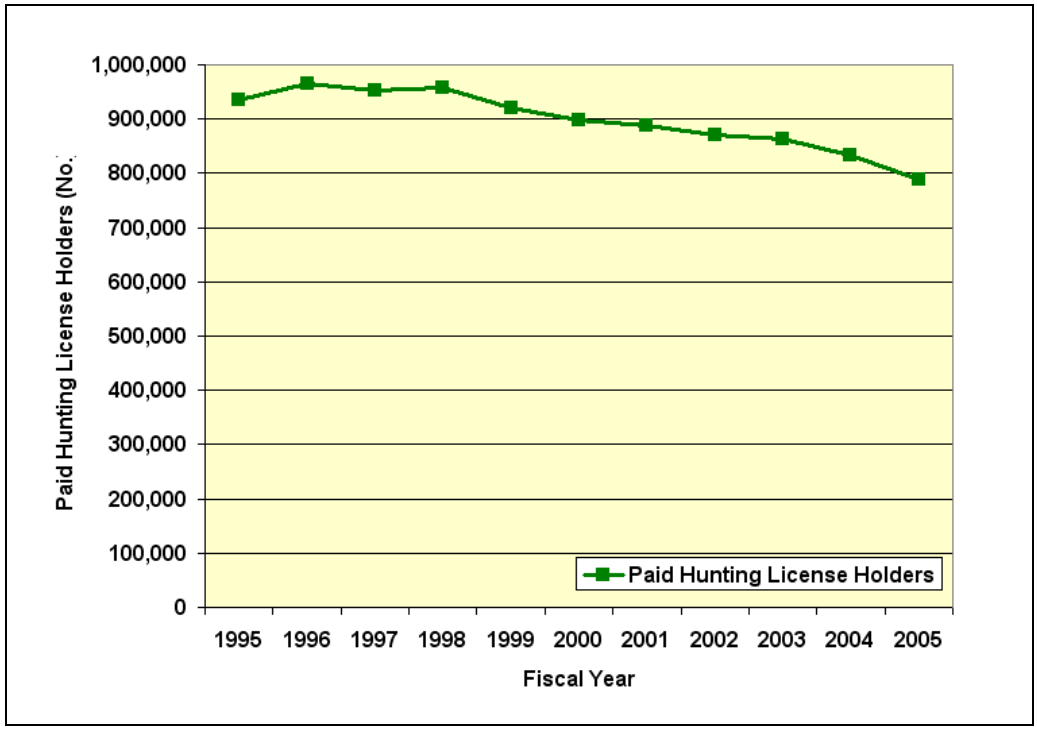

Figure 6.10. Number of paid hunting license holders in Michigan, 1995-2005 (Source: Frawley 2004 and MiDNR unpublished data).

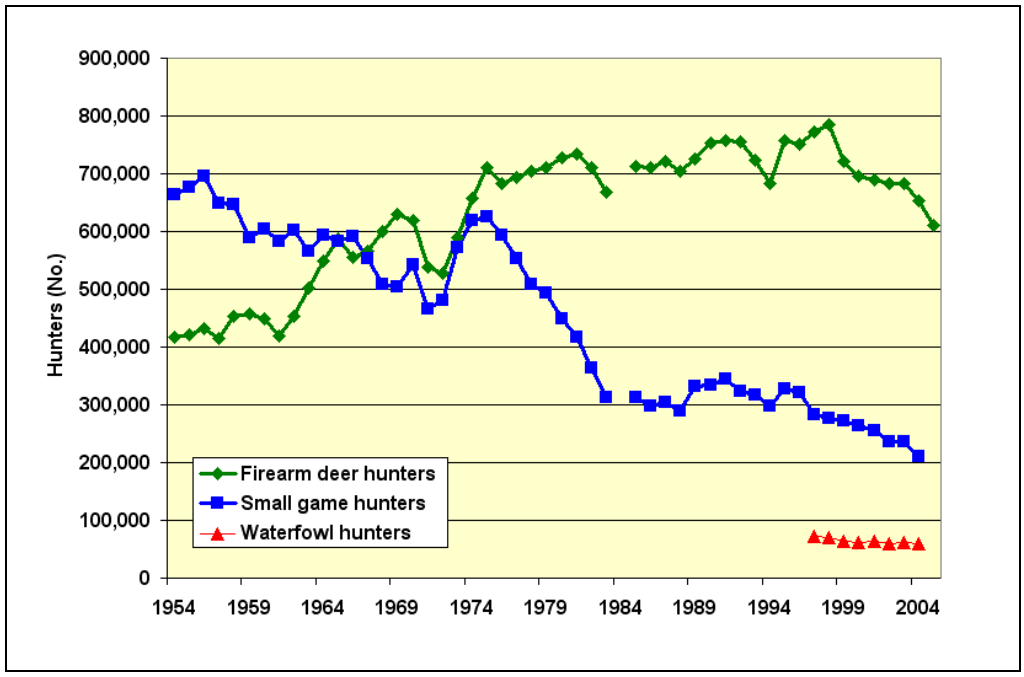

Figure 6.11. Number of active firearm deer, small game, and waterfowl hunters (went afield) in Michigan, 1954-2005 (Source: Frawley 2004 and MiDNR unpublished data). Note: All available annual data presented.

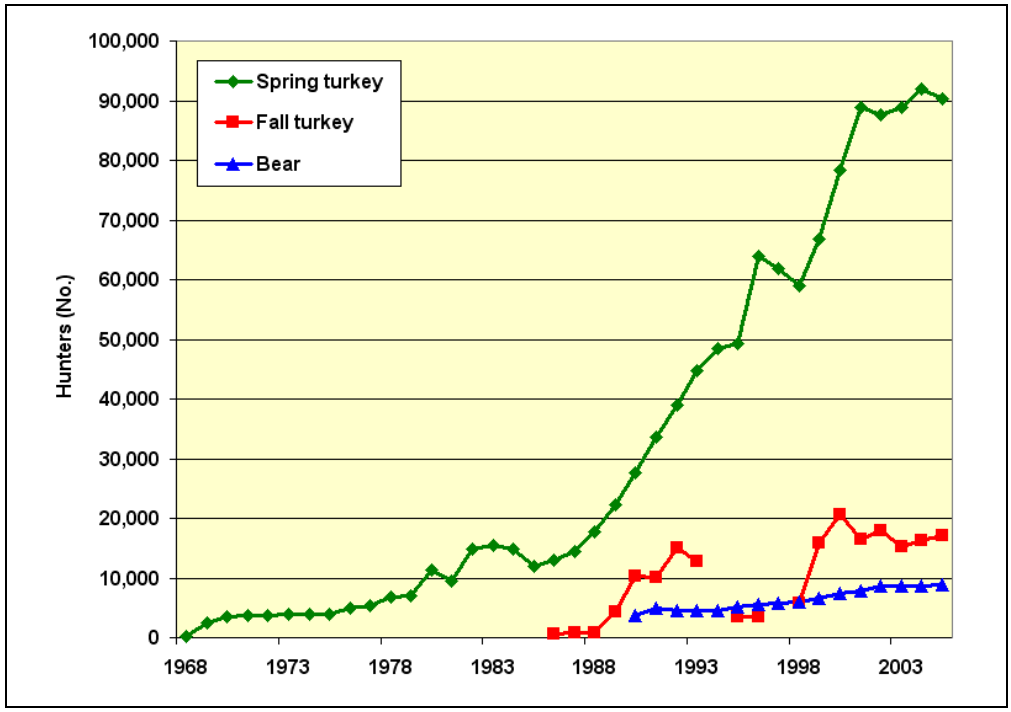

Figure 6.12. Number of active spring turkey, fall turkey, and bear hunters (went afield) in Michigan, 1968-2005 (Source: Frawley 2004 and MiDNR unpublished data).

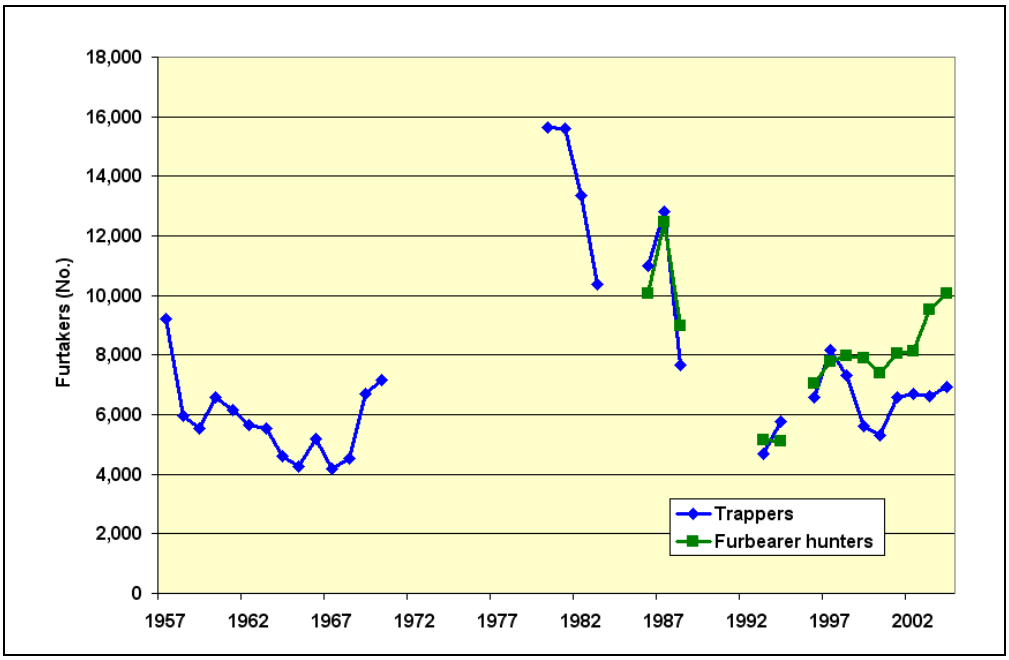

Figure 6.13. Number of active furtakers (went afield) that trapped or hunted furbearers in Michigan, 1957-2004 (Source: Frawley 2004 and MiDNR unpublished data).

Several studies have been directed at developed and dispersed recreation use on state and national forests in Michigan (Nelson 1993, Nelson and Claesson 1994, Nelson and Lynch 1994, and Nelson and Lynch 1995). Poor signage makes it difficult to differentiate state forest and national forest lands and the lands are often intermingled. The Michigan Department of Natural Resources and Huron-Manistee National Forests jointly funded a project to estimate dispersed recreation in 1992. NVUM sampling protocols for general forest areas (GFA) used trailheads or Forest Service roads where users exit the national forest. The sampling approach used by Nelson (1993) was to identify selected forest compartments that were not associated developed sites, trailheads or other access points—so this collection of users are likely a subset of GFA visitors who represent dispersed recreation uses. Mail-back postcards were placed on vehicles rather than using NVUM-like personal interviews to collect limited data on recreation use. Neither approach captures recreation use by adjacent landowners who can walk onto the forests. Also, this dispersed recreation study did not include any use during January – March, a low visitor-use time, but a previous study on the nearby Pigeon River Country State Forest indicated that 96% of use occurred during the April - December period.

Dispersed recreation visits by people who drove to the forest to recreate (tourists) were estimated at over 823,000 for 1992 using this method (Nelson 1993). Out-of-state vehicles accounted for 6.6% of the total. The main reasons for the visit were: 1) deer hunting, including scouting, blind building and baiting, 2) ORV riding, 3) grouse/ woodcock hunting, 4) fishing, and 5) nature observation. Many visitors were involved in multiple activities (e.g., nature observation and hunting). Results from the AuSable State Forest yielded similar levels of dispersed recreation use and preferences as the Huron-Manistee National Forests. The number of visits was not estimated for adjacent landowners and their guests,. Instead, recreation visitor hours were calculated: 3.6 million visitor hours by tourists and 4.4 million visitor hours by adjacent landowners and their guests (Nelson and Lynch 1994). Thus, over 55% of the recreation activity originated from people who did not drive to the forest. The top five recreation activities for this group were deer hunting, hiking/walking, nature observation fishing, and ORV riding.

During 1992, selected stakeholders were asked to assess their preferences for semi-primitive areas on the Huron-Manistee National Forests (Nelson and Claesson 1994). Three sample groups were surveyed—users of semi-primitive areas, other dispersed recreation users (not in semi-primitive or wilderness areas), and landowners within the designated national forest proclamation boundaries. Two hundred users in each group were contacted and asked questions regarding their use of the forest, types of forest attributes they desired, organizational linkages (e.g., Sierra Club, Michigan Association of Timbermen, etc.), and knowledge of semi-primitive recreation concepts. The majority of respondents favored designation of more areas for semi-primitive recreation. At the

time, 10% of the Huron-Manistee National Forests was designated as semi-primitive (see Table 6.3). The groups preferred 23-35%, with the users of semi-primitive areas desiring the most area. Regardless of preferences, semi-primitive designation depends upon lands that meet the criteria for inclusion. Roads and private landholdings in the NLP limit opportunities for semi-primitive areas.

In 1993-94, a study was undertaken similar to the one on the Huron-Manistee National Forests and AuSable River State Forest in the NLP. The focus was on the Hiawatha National Forest and Lake Superior State Forest in the EUP (Nelson and Lynch 1995). This study also included use of selected designated motorized and non-motorized trails and use of designated day-use areas at campgrounds, picnic areas, and water-access sites. The sample included visitors who drove to the forests and those who lived adjacent to the forests and accessed the forests without automobiles. Selected developed sites and 10% of forest compartments were sampled. Sampling was not done from January through April; low recreation use via roads and low levels of dispersed use found during that period in previous studies justified the sampling period. Adjacent landowners and their guests spent more time than vehicle-based visitors recreating on the Hiawatha National Forests (503,700 vs. 640,100 recreation hours). Therefore, counting only vehicle-based visitors would greatly underestimate recreation use on the forest. Picking berries/mushrooms, fishing, deer hunting, grouse/woodcock hunting, and other hunting were the top five activities for vehicle-based visitors. The most important activities for adjacent landowners were deer hunting, hiking/walking, snowmobiling, fishing, and nature observation. Lodging use differed by type of recreation visitor; for example, 55% of vehicle-based visitors to dispersed areas stayed in their principal residence on the night prior to being sampled, 20% camped, and 14% stayed in a second home. Forty-three percent of non-motorized trail users stayed in their principal home, 28% camped, and 14% stayed in second homes.

University researchers have conducted several studies that focus on recreation in or near national forests. One Huron-Manistee National Forests' study focused on Nordhouse Dunes Wilderness Area; it is adjacent to Lake Michigan north of Ludington (McDonough et al. 1996, Wiita 1998). The focus was on information for managers interested in limits of acceptable change in the wilderness area. Some data addressed visitation, description of visitors and recreation activities. A total of 506 visitors were interviewed over an 11-month period in 1993-94 at various times and locations over the study period. Total use for the area was estimated at 3,575 recreation visits for the year (Note: This compares to 12,000 visits from NVUM based on a much smaller sample of 73 visitors across 24 sample days.). Viewing scenery and hiking were the most commonly noted activities. Two-thirds of the visitors were day users, and over 40% were within 60 miles of the area or from the Muskegon-Grand Rapids area.

Outdoor recreation is one important dimension of life in the EUP and in northern Wisconsin. In the EUP, households were asked to identify their three favorite outdoor activities in which they or some member of the household participated during 1996 (Table 6.16). Most households participated in more passive outdoor activities such as wildlife viewing (85%), flower gardening (67%), wild berry picking (64%) and wildlife feeding (60%). Most respondents participated in other outdoor recreation activities: fishing (71%), swimming (66%), boating (65%), hunting (57%) and camping (48%). Skating/sledding (42%), snowmobiling (40%), cross-country skiing (32%) and downhill skiing (14%) were popular winter activities. Seasonal residents reported higher rates of participation in fishing, swimming, boating, wildlife viewing and cutting firewood while permanent residents were more likely to engage in gardening activities, snowmobiling and ORV use. Both seasonal and permanent residents listed fishing, hunting and walking/hiking as their top three (favorite) activities. Northern Wisconsin households identified many of the same activities—fishing, hunting and walking and hiking were listed as most frequent activity (Clendenning and Field 2003). Based on focus group discussions in the WUP., the most common recreation activities noted by participants were hunting, hiking and fishing (Spence and McDonough 2000).

Table 6.16. Participation in outdoor activities by segment in the eastern Upper Peninsula and northern Wisconsin.

Activity	Eastern U.P.			Northern Wisconsin		
	All households	Seasonal residents	Permanent residents	All households	Seasonal residents	Permanent residents
Wildlife watching	85%	93%	82%	66%	63%	69%
Fishing	71%	82%	67%	77%	80%	74%
Flower gardening	67%	46%	74%	NA	NA	NA

Activity	Eastern U.P.			Northern Wisconsin		
	All households	Seasonal residents	Permanent residents	All households	Seasonal residents	Permanent residents
Swimming	66%	75%	63%	65%	55%	76%
Boating (incl. jet skiing)	65%	81%	59%	67%	57%	79%
Wild berry picking	64%	66%	64%	49%	53%	45%
Wildlife feeding	60%	58%	61%	NA	NA	NA
Hunting	57%	53%	59%	46%	56%	35%
Cutting firewood	50%	62%	46%	46%	47%	45%
Camping	49%	40%	51%	19%	25%	14%
Vegetable gardening	48%	18%	51%	NA	NA	NA
Skate, sled, snowshoe	42%	31%	46%	NA	NA	NA
Biking	42%	42%	51%	30%	28%	32%
Off-road vehicles	41%	35%	44%	28%	27%	28%
Planting trees	41%	36%	43%	NA	NA	NA
Snowmobiling	40%	31%	43%	25%	25%	24%
Other gathering activities	38%	34%	40%	NA	NA	NA
Mushroom picking	35%	32%	36%	NA	NA	NA
Cross-country skiing	32%	30%	32%	NA	NA	NA
Downhill skiing	14%	10%	15%	NA	NA	NA
Snow skiing	NA	NA	NA	15%	16%	14%
Tapping for maple syrup	7%	3%	9%	NA	NA	NA
Walking/hiking	NA	NA	NA	78%	77%	76%
Canoeing	NA	NA	NA	41%	48%	35%

Source: Stynes and Kakoyannis 1999, and Clendenning and Field 2003

Spending Profiles for Forest-Based Recreation Visitors

Expenditures by recreation visitors are used to assess economic impacts (e.g., jobs, income, etc.) associated with various recreational activities. Some economists estimate the economic role of recreation and tourism in local or regional economies. Others focus on economic impacts based on new money coming into a region. Expenditures by non-local forest visitors are normally counted as new money for the region, whereas local recreation users would spend money for food, lodging and other items regardless of whether they were recreating or not. The local recreation users do not contribute new economic activity. Economic impact models, such as the Forest Service's IMPLAN model, provide a quantified representation of economic activity and linkages between various economic sectors (e.g., hotels and lodging places, eating & drinking, gasoline & oil, etc.). Recreation expenditures are often in categories that do not perfectly align with IMPLAN-type industrial sectors. As a result, "bridge tables" are used to link common recreation spending categories with IMPLAN sectors.

Several recreation studies include expenditure profiles for various types of recreation users. Estimates of money spent for various goods and services are tabulated and used as a basis for calculating economic impacts. For the Hiawatha National Forest, visitors estimated the amount of money spent they spent within a 50 mile radius of the recreation site at which they were interviewed during their recreation trip to the area (Kocis et al. 2002a). Trips may include multiple national forest visits and visits to other forests or parks. Average per person spending was estimated in ten categories on the Hiawatha National Forest (Table 6.17). Similar data for the Huron-Manistee and Ottawa national forests were not published, but are available for planning analysis (Kocis et al. 2002b, 2004).

National level data are available from the Forest Service to calculate activity-based spending profiles (e.g., camping, fishing, etc.).

Table 6.17. Average per person national forest trip expenditures within 50 miles of recreation site, Hiawatha National Forest.

Expenditure Category	Average expenditure =$100.67
Government owned lodging	1.06
Privately owned lodging	24.48
Food/drink at restaurants and bars	26.29
Other food and beverages	14.16
Gasoline and oil	25.70
Other transportation (plane, bus, etc.)	.49
Activities (including guide fees and equipment rental)	.63
Entry, parking, or recreation use fees	1.07
Souvenirs/ clothing	2.47
Any other expenses	4.32

Source: Kocis et al. 2002a, 2002b.

Several other studies include economic expenditure profiles and economic impact estimates. Spending profiles are available for Michigan ORV users (Nelson et al. 2000). They spent $264 per trip in 1998-99. Michigan snowmobiling participants spent $80 per trip for day trips (>100 miles) and $551 per trip for overnight trips in 1996-97 (Nelson et al. 1998). Mean spending per tourist visitor party on the Pere Marquette River was over $120 in 1996-97 and about $100 per visitor per day on the Upper Manistee River in 2001 (Nelson et al.1998b, Nelson et al. 2002).

Wildlife-associated expenditure profiles are also available (U.S.D.I. Fish and Wildlife Service, and U.S.D.C. Bureau of the Census 1998, 2003). These studies provide average expenditures per person for fishing and hunting for the entire year—expenditures are listed for food and lodging, transportation, equipment and other categories. These data can be used to estimate economic impacts of fishing, hunting and wildlife viewing on forest lands (Maharaj and Carpenter 1999).

Economic Impacts of Forest-Based Recreation Visitors

Recreation use and spending profile data are often combined to provide estimates of economic impacts. Often, these estimates are based on a single recreation activity. For example, Stynes and others (1998) estimated that households with snowmobile permits spent $160 million on their snowmobile trips in 1996-97, and an additional $400 million on equipment-related items. The total impacts of this activity, using economic impact multipliers, was $321 million in sales, $187 million in income, and support for over 6,000 jobs.

The U.S.D.I. Fish and Wildlife Service (1998, 2003) periodically conducts a national survey of fishing, hunting and wildlife-associated recreation (bird feeding, etc.). The survey compiles data on expenditures related to expenditures related to trips and equipment/other for Michigan residents and other participants 16 years and older. For 2001, the total expenditures were $839 million for fishing, $490 million for hunting, and $693 million for wildlife watching. The role of these expenditures in the Michigan economy could be assessed using spending profiles and economic impact models. Even without further analysis, it is clear that $2 billion is a significant contribution to Michigan's economy, and many of these expenditures are made in northern Michigan.

National forests in Michigan published their revised forest plans and associated final environmental impact statements in 2006. As part of their planning effort, they assessed the economic impacts (sales, income and jobs) of proposed management of national forest lands and programs (see for example, http://www.fs.fed.us/r9/hmnf/pages/planning.htm). The broadest assessment of this sort in Michigan was

completed in the 1990s. Pedersen and Chappelle (1997) estimated that in 1990 there were $39 billion in sales associated with wood products industries (including multiplier effects) and $5.9 billion in expenditures associated with recreationists in forested areas. When combined, there were an estimated 527,000 jobs associated with these industries and $7.6 billion in wages and salaries in 1990. From a ecoregional planning perspective, there are no current ecoregional or state forest-related impact studies.

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Social and Economic Assessment for Michigan's State Forests

APPENDIX

Prepared for: Michigan Department of Natural Resources
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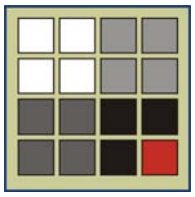

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Appendix